

BLUE RIBBON TASK FORCE ON NANOTECHNOLOGY

CONTROLLER STEVE WESTLY, REP. MIKE HONDA, SCOTT HUBBARD - NASA

FOR IMMEDIATE RELEASE: DECEMBER 19, 2005

CONTACT: GARIN CASALEGGIO (WESTLY)
916-445-2636

JAY STAUNTON (HONDA)
202-225-3327

LAURA LEWIS (NASA)
650-604-2162

CA Nanotech Team Issues Plan for \$1 Trillion Industry

NASA Ames Research Center - California must make immediate education and infrastructure investments if the state is to be the center of the \$1 trillion nanotechnology industry, Controller Steve Westly and Rep. Mike Honda said today.

Westly and Honda spoke as they received recommendations from the Blue Ribbon Task Force on Nanotechnology they created in December 2004 to ensure California's leadership in the industry and to maximize the accompanying economic and employment gains to the state.

"Soon, nanotechnology will be a \$1 trillion industry. If it's going to be a California industry, we must act now to invest in education and our innovation infrastructure," Westly said. "Nanotechnology may sound like something out of Star Trek, but it's already being used in airplanes, tennis rackets and to clean up toxic waste. Companies like GM and Levi's have proven that nanotechnology is real. The nanotech revolution is going to happen. The question is: will California lead it? We're here today to make sure we do."

"Investing in innovation is the key to a vibrant US manufacturing base and the continued generation of new jobs," Honda said. "Nanotechnology has the potential to create entirely new industries and radically transform the basis of competition in other fields, and the work of the Blue Ribbon Task Force on Nanotechnology will help us tap that potential."

"Nanotechnology will enable the building of lightweight, high-strength composites and novel sensors for future-generation spacecraft," said NASA Ames Research Center Director G. Scott Hubbard, the task force's working chair. "NASA's goal is to ensure that nanotechnology-based products are available as quickly as possible to enable the nation's Vision for Space Exploration."

Nanotechnology is currently used by Levi's, Gap and other companies to make stain resistant clothes; by L'Oreal to deliver small particles of moisturizer deep into the skin; and by Wilson to keep air from leaking from tennis balls.

Nanotechnology is being researched as a way to attack plaque that forms within blood vessels, a leading cause of cardiac arrest; to build incredibly small electronic devices; and to clean chemicals from the human body and the environment.

Please see the following Executive Summary of the task force's recommendations. A [full copy of the report](#) is available.

-More-

EXECUTIVE SUMMARY

While nanotechnology - the manipulation and exploitation of the unique properties of matter at the microscopic scale - is a relative newcomer to our arsenal of technical capabilities, it would be hard to overstate its potential or importance. It holds the promise of revolutionary breakthroughs in the fields of medicine, energy, environmental controls and others, with the anticipation of new research, products, jobs and entire industries.

For that reason, the United States developed and implemented a national nanotechnology policy more than five years ago. To preserve its technology leadership and economic strength, the state of California must now embrace the nanotechnology challenge.

To that end, in December 2004, state controller Steve Westly and federal representative Mike Honda chartered the Blue Ribbon Task Force on Nanotechnology (BRTFN). Under the chairmanship of NASA Ames director Scott Hubbard, the BRTFN's mission is to evaluate the status of nanotechnology in California and determine what actions are needed on the part of state and federal policy makers to ensure California's leadership in nanotechnology. This final report summarizes our findings and recommendations.

Overall, we find that California has an excellent infrastructure, encompassing world-class universities, national labs and the private industrial base. Our state is well positioned to compete, and lead, in the nanotechnology age. The BRTFN finds, however, that state policy makers must take urgent action in eight key areas if California is to achieve its potential in nanotechnology research, development and product commercialization.

One, we must **Build on California's Existing Strengths** in semiconductors and biotechnology to assert state leadership in nanoelectronics and nanobiotechnology.

The BRTFN urges strong and proactive state action built around:

- Developing a state response to the tax incentives and grants of foreign governments and the subsidies to manufacturers provided by other U.S. states;
- Providing increased state funding for California universities to compete for nationwide consortia research grants; and
- Providing full funding for the semiconductor Focus Center Research Program.

California must also take advantage of its strong, existing nanotechnology infrastructure and implement a comprehensive strategy to reduce redundancy and promote access and resource sharing, particularly for startups in emerging nanotechnology areas.

Further, we must foster the development and marketing of California's nanotechnology business clusters. This can be accomplished by creating special 'start-up zones' adjacent to research universities and national labs; implementing a state income tax holiday for companies making investments in capital and hiring or training workers associated with new nanotechnology product lines; restoring the exemption from sales tax for the purchase of capital equipment; and making effective use of application-specific development funds to support collaborative nanotechnology research in such fields as alternative energy sources, the environment, security and health.

Two, California must make it a priority to **Bridge the Innovation/Commercialization Gap** that results in the so-called 'valley of death.' To that end, the BRTFN proposes that the state provide applied research matching funds to innovation centers in conjunction with private investment; launch a state-based Small Business Innovative Research (SBIR) program; and influence state universities and California-based national labs to institute procedures simplifying and clarifying their licensing and intellectual property processes so as to accelerate the transition of ideas from the lab to the marketplace.

Three, California must institute a strategic approach to **Promote and Market** its nanotechnology assets and **Coordinate** efforts to pursue federal funding at the state level. Specifically, California must actively promote itself as a world nanotechnology leader by such things as hosting 'Nano Weeks' and sponsoring a California 'Nano Portal.' The BRTFN recommends that the state empower an entity with membership from across the spectrum of major California businesses, federal and state agencies, and academic institutions to lead strategic and proactive promotion, marketing and coordination efforts.

Four, the BRTFN proposes that the state **Launch a 'California Innovation Initiative'** to take advantage of the powerful convergence of the very strong base of bio, info, and nanotechnology assets in California. Elements of such an initiative might include:

- Providing funds to operate the California Institutes for Science and Innovation;
- Exploring ways to increase angel and early-stage investment in startups that are commercializing converging technologies;
- Encouraging state agencies to identify areas where California can be an 'early customer' of new technologies;
- Taking steps to expand California's bio, info and nano workforces; and
- Providing mid-career professionals with re-education assistance programs.

Five, the state of California must take steps to ensure that its education system, at all levels, is adequate to **Prepare a Globally Competitive Workforce** essential to compete effectively in high-tech business. To that end, California should require at least one hour of quality math and science instruction daily for all of its K-12 students, and make it a high priority to conduct the extensive training of new teachers and professional development of existing teachers needed, particularly in schools in low-income areas. The state should provide new funds in the state university and community college system budgets to provide for the creation of interdisciplinary courses in nanotechnology, and should encourage high-tech companies to assist in the creation of training courses that support technology manufacturing. The state should encourage national labs with nanotechnology expertise to provide content suitable for developing nanotechnology exhibits; require informal education centers that have developed nanotechnology materials to share their efforts with others; and sponsor efforts to develop and coordinate statewide collaboration of science museums and informal education venues.

Six, California should lead pioneering efforts to **Understand and Communicate the Ethical, Environmental and Societal Implications of Nanotechnology**. Among other things, the California Environmental Protection Agency (Cal/EPA) should:

- Actively promote environmentally beneficial applications of nanotechnology through research, pilot projects and field trials;
- Negotiate an information-exchange and problem-solving agreement with nanotechnology manufacturers concerning responsible stewardship of nanotechnology products;
- Track health data about nanotechnology so that appropriate and timely actions can be taken before problems develop; and
- Lead in the implementation of responsible environmental applications of nanotechnology.

In addition, the state should leverage its strength in entertainment and science museums to increase public awareness and understanding of nanotechnology; encourage widespread and rapid adoption of alternative energy sources through tax and regulatory policy; and establish credible, independent sources of information about nanotechnology.

Seven, while there are no easy fixes, the state needs to take steps to **Address Business Climate Concerns in California** so as to level the playing field for state-based businesses relative to those in other states and countries. This might include consideration, among other things, of income tax holidays and sales tax exemptions. California should also work with the federal government to alleviate the burden of excessive, costly and confusing business regulations. Finally, state policy makers should enlist California's federal legislative delegation to explore avenues to amend current SBIR regulations to permit venture capital-backed startups to qualify for SBIR awards.

Eight, the state of California should **Empower Organizations to Continue the BRTFN Mission**. This can be done through one or more regional consortia charged with building partnerships and collaborations encompassing the breadth and diversity of California institutions involved in nanotechnology research and commercialization.

In summary, California is very well positioned to be a world leader in nanotechnology. However, this won't happen by accident -- a strategic and coordinated state-led effort is essential to achieve success. Given that we are already in the midst of a nanotechnology revolution of unprecedented magnitude and economic impact, it is absolutely vital that the state of California take on this leadership challenge. This BRTFN report presents a clear and concise blueprint for doing just that.

###